WE CLAIM:

1. A process for producing an integrated circuit comprising reducing copper oxide on a substrate by exposure to one or more organic reducing agents prior to deposition of a layer comprising silicon carbide.

2. The process of Claim 1, wherein the layer further comprises oxygen.

3. The process of Claim 1, wherein the layer serves as a hard mask.

4. The process of Claim 1, wherein the organic reducing agent comprises at least one functional group selected from the group consisting of alcohol (-OH), aldehyde (-CHO), and carboxylic acid (-COOH).

5. The process of Claim 4, wherein the organic reducing agent is selected from the group consisting of primary alcohols, secondary alcohols, tertiary alcohols, polyhyrdroxyalcohols, cyclic alcohols, and halogenated alcohols.

6. The process of Claim 4, wherein said organic reducing agent is selected from the group consisting of:

compounds having the general formula R^3-CHO, wherein R^3 is hydrogen or a linear or branced C_1-C_{20} alkyl or alkenyl group;

compounds having the general formula OHC-R^4-CHO, wherein R^4 is a linear or branched C_1-C_{20} saturated or unsaturated hydrocarbon;

a compound of the formula OHC-CHO;

halogenated aldehydes; and

other derivatives of aldehydes.

7. The process of Claim 4, wherein the organic reducing agent is selected from the group consisting of:

compounds of the general formula R^5COOH, wherein R^5 is hydrogen or a linear or branched C_1-C_{20} alkyl or alkenyl group;

polycarboxylic acids;

halogenated carboxylic acids; and

other derivatives of carboxylic acids.

8. The process of Claim 1, wherein said copper oxide is presentafter a chemical mechanical polishing (CMP) step.

9. The process of Claim 1, wherein said copper oxide is formed by exposure to a clean room atmosphere.

10. The process of Claim 1, wherein said exposure takes place in a first reaction chamber.

11. The process of Claim 10, wherein said layer serves as an etch stop.

12. The process of Claim 11, wherein deposition of the etch stop layer also takes place in the first reaction chamber.

13. The process of Claim 11, wherein deposition of the etch stop layer takes place in a second reaction chamber clustered with the first reaction chamber.

14. The process of Claim 11, wherein the temperature in the reaction chamber is less than about 450°C.

15. The process of Claim 11, wherein the temperature in the reaction chamber is between about 200 and 430°C.

16. The process of Claim 11, wherein the temperature in the reaction chamber is about 400°C.

17. The process of Claim 11, wherein reduction of copper oxide and deposition of the etch stop are carried out in the same reaction chamber at about the same temperature.

18. A process for producing an integrated circuit comprising reducing copper oxide on a substrate by exposure to hydrogen plasma prior to deposition of an etch stop layer.

19. The process of Claim 18, wherein the etch stop layer comprises silicon carbide.

20. The process of Claim 19, wherein the etch stop layer further comprises oxygen.

21. The process of Claim 18, wherein the reduction of copper oxide and deposition of the etch stop layer are carried out in the same reaction chamber.

22. The process of Claim 21, wherein desposition of the etch stop layer is carried out at about the same temperature as the reduction of copper oxide.

23. A process for producing an integrated circuit comprising reducing copper oxide on a substrate by exposure to H_2 gas at elevated temperature prior to deposition of an etch stop layer.

24. The process of Claim 20, wherein the etch stop layer comprises silicon carbide.

25. The process of Claim 24, wherein the etch stop layer further comprises oxygen.

26. The process of Claim 23, wherein reduction of copper oxide and deposition of the etch stop layer are carried out in the same reaction chamber.

27. The process of Claim 26 wherein deposition of the etch stop layer is carried out at about the same temperature as the reduction of copper oxide.

28. A process for producing an integrated circuit comprising the following steps, in order:

depositing a copper layer on a substrate;

subjecting the copper layer to a CMP process;

contacting the substrate with one or more organic reducing agents; and

depositing an etch stop layer on the substrate.

29. The process of Claim 28, wherein the organic reducing agent comprises at least one functional group selected from the group consisting of alcohol (-OH), aldehyde (-CHO), and carboxylic acid (-COOH)

30. The process of Claim 28, wherein the etch stop layer comprises silicon carbide.

31. The process of Claim 30, wherein the etch stop layer further comprises oxygen.

32. The process of Claim 28, wherein the etch stop layer comprises silicon nitride.